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| 09/918,530      | 08/01/2001  | Naoko Hiramatsu      | 009683-383          | 3487             |

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EXAMINER

SHERALI, ISHRAT I

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/918,530

Applicant(s)

HIRAMATSU ET AL.

Examiner

Sherali Ishrat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03/032005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-11 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Response to Amendment/Arguments**

1. This action is in response to amendment/arguments received on 3/3/2005.

Applicant's arguments are fully considered however they are moot due to new grounds of rejection, which was necessitated due to amendment to the claims.

### **Claim Rejections - 35 USC § 103**

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5-6 and 8-11 are rejected under 35 USC §103 (a) as being unpatentable over Narahara (US 6,023,527) in view of Ito (US 6,388,674).

Regarding claim 1 and 8-9, Narahara discloses color matching (Narahara in col. 4, lines 54-57, states "CRT monitor in figure 3 is input device while the printer is output device for purpose of gamut mapping process" which corresponds to color matching), in which when color reproduction ranges of first device and a second device differ, image data within a color reproduction range of first device is converted conversion parameter into image data within color reproduction range of second device (Narahara in col. 8, lines 30-34, states "input color is represented as point on the CRT reproduction space at a distance. The input color is mapped onto an output color in the printer color space. The distances in and out are adjusted by a parameter beta so that

the mapping is controlled " which corresponds to in which when color reproduction ranges of first device and a second device differ, image data within a color reproduction range of first device is converted conversion parameter into image data within color reproduction range of second device), comprising the steps of:

obtaining data related to specific color of first device and related to specific color of second device in a prescribed color space (Narahara, in col. 5, lines 5-10, states "The RGB signal of CRT display is first processed by a RGB to Lab conversion and then by a Lab to conversion unit" and in col. 5, lines 12-15, LCH is further processed to determine the best gamut mapping technique. A reproduction color space mapping unit receives the converted LCH signal as well as command indive of particular mapping technique" which corresponds to obtaining data related to specific color of first device and related to specific color of second device in a prescribed color space. ); and

determining conversion parameter by estimating the color reproduction range of first device and the color reproduction range of second device based on the respective data related to the specific color that are obtained (Narahara in col. 6, lines 30-45, "out-of gamut selection command for selecting an area containing that are not within a specified gamut. Luminance values is higher than predetermined luminance value, selecting an area whose crom a value is higher than predetermined crom a value and selecting area whose hue value is within certain range. Examples of the hue condition specify whether input hue is within range of Hred-offset and Hred+offset, Hblue-offset and Hblue+offset and Hgreen-offset and Hgreen+offset where offset is a predetermined value Hred, Hblue and Hgreen are hue in the HCL color space and in col. 5, lines 49-52,

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based upon the above determined mapping technique, a subsequent input image is mapped and mapped signal  $L_o$ ,  $C_o$ ,  $H_o$ , is converted to CMYK " which corresponds determining conversion parameter by estimating the color reproduction range of first device and the color reproduction range of second device based on the respective data related to the specific color that are obtained).

Narahara however has not explicitly shown calculating conversion parameter by the color reproduction range of first device and color the reproduction range of second device on respective color data.

In the same field of endeavor Ito discloses calculating conversion parameter by the color reproduction range of first device and color reproduction range of second device on respective color data (Ito in col. 11, lines 10-20 states "the algorithm employed in the gamut mapping [color conversion between first and second device] is such that the terms lightness, chroma and hue differences in the color difference formula are weighted as shown equation 3, col. 11, lines 14, the weighting factors referred to as coefficients of compressibility [conversion parameter/coefficients by the color reproduction range of first device and color the reproduction range of second device on respective color data] for gamut in a direction in which each color difference is minimized i.e Ito is calculating conversion parameter by the color reproduction range of first device and color the reproduction range of second device on respective color data by gamut mapping such that lightness, chroma and hue differences in the color difference formula are weighted by weighing factors for gamut compression [color conversion] in a direction in which each color difference is minimized and such

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coefficients which minimize color difference corresponds to calculated parameter for color conversion/gamut mapping.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Ito calculating conversion parameter by the color reproduction range of first device and color the reproduction range of second device on respective color data in the system of Narahara because such system of color conversion/gamut mapping permit maintaing/keeping the color characteristics such as contrast, third dimension and vividness (Ito, col. 12, lines 36-42).

Regarding claim 2, Narahara discloses the conversion parameter to be calculated includes related conversion of chroma (Ito in col. 11, lines 10-15, states "the algorithm employed in the gamut mapping [color conversion between first and second device] is such that the terms lightness, chroma and hue differences in the color difference formula are weighted ).

Regarding claim 3, Narahara discloses prescribed color space is independent of device (Narahara, , col. 5, lines 9-10, shows Lab to LCH which is known to be device independent color space).

Regarding claim 5, Narahara discloses color of first device and second device include data of blue point (Narahra col. 5, lines 7-10, Nahara shows input RGB signal converted to Lab and Lab is converted to LCH, and col. 5, lines 50-52, input image is mapped and the mapped output signal LoCoHo is obtained. Since LCH signal is obtained from RGB therefore color of first device and second device include data of blue point [B])

calculating a parameter related to the conversion of the blue point (Narahara in col. 8, lines 30-34, states "input color is represented as point on the CRT reproduction space at a distance. The input color is mapped onto an output color. The distances "in" and "out" are adjusted by a parameter beta so that the mapping is controlled. Therefore when LCH is mapped to LoCoHo the blue point in terms of Chrominance [C] and hue [H] conversion depended on parameter beta).

Regarding claim 6, Narahara discloses color of first device include data of a blue point, red point and green point (Narahara col. 5, lines 7-10, Nahara shows input RGB signal converted to Lab and Lab is converted to LCH, therefore, color of first device include data of a blue point, red point and green point)

calculating a parameter related to hue based on the data obtained respective blue point red point and the green point (Narahara, in col. 39-45, states "Examples of the hue condition specify whether input hue is within range of  $H_{red}-offset$  and  $H_{red}+offset$ ,  $H_{blue}-offset$  and  $H_{blue}+offset$  and  $H_{green}-offset$  and  $H_{green}+offset$  where offset is a predetermined value  $H_{red}$ ,  $H_{blue}$  and  $H_{green}$  are hue in the HCL color space which corresponds to calculating a parameter related to hue based on the data obtained respective blue point red point and the green point).

Regarding claim 10, Narahara disclose obtaining data of white point and black point in a first color space reproduced by first image reproduction device (Narahara, in figures 9-8 shows color CRT reproduction boundary on graph of luminance versus chroma, luminance axis shows white and black points for color CRT reproduction which

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corresponds to obtaining data of white point and black point in a first color space reproduced by first image reproduction device);

obtaining data of white point and black point in a first color space reproduced by first image reproduction device (Narahara, in figures 9-8 shows ink jet reproduction boundary on a graph of luminance versus chroma, luminance axis shows white and black points for inkjet reproduction which corresponds to obtaining data of white point and black point in a second color space reproduced by second image reproduction device);

obtaining general shapes of first color space and second color space (Narahara in figures 9-8 shows color CRT and inkjet reproduction boundaries [shapes] which corresponds to obtaining general shapes of first color space and second color space) ,

determining a conversion parameter for converting based on estimation data within first color space to second color space (Narahara in col. 7, lines 44-50, states referring to figure 8, luminance of color display substantially maintained during the mapping while the chroma is adjusted to map onto the gamut of inkjet printer" which corresponds to determining a conversion parameter [chroma] for converting based on estimation data within first color space to second color space).

Narahara however has not explicitly shown calculating conversion parameter by the color reproduction range of first device and color the reproduction range of second device on respective color data.

In the same field of endeavor Ito discloses calculating conversion parameter by the color reproduction range of first device and color reproduction range of second



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device on respective color data (Ito in col. 11, lines 10-20 states "the algorithm employed in the gamut mapping [color conversion between first and second device] is such that the terms lightness, chroma and hue differences in the color difference formula are weighted as shown equation 3, col. 11, lines 14, the weighting factors referred to as coefficients of compressibility [conversion parameter/coefficients by the color reproduction range of first device and color the reproduction range of second device on respective color data] for gamut in a direction in which each color difference is minimized i.e. Ito is calculating conversion parameter by the color reproduction range of first device and color the reproduction range of second device on respective color data by gamut mapping such that lightness, chroma and hue differences in the color difference formula are weighted by weighing factors for gamut compression [color conversion] in a direction in which each color difference is minimized and such coefficients which minimize color difference corresponds to calculated parameter for color conversion/gamut mapping.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Ito calculating conversion parameter by the color reproduction range of first device and color the reproduction range of second device on respective color data in the system of Narahara because such system of color conversion/gamut mapping permit maintaing/keeping the color characteristics such as contrast, third dimension and vividness (Ito, col. 12, lines 36-42).

Regarding claim 11, Narahara discloses correcting lightness (Narahara, col. 7, lines 30-35, states "adjusting luminance of color display", which corresponds to correcting lightness)

### **Claim Rejections - 35 USC § 103**

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4, is rejected under 35 U.S.C. 103(a) as being unpatentable over Narahara (US 6,023,527) in view of Ito et al. (US 6,388,674) as applied to claim 1 and further in view of Tsukada (6,560,358).

Regarding claim 4, Narahara have not explicitly disclosed first and second device include color temperature of white point

calculating a parameter related to conversion of chroma based on color temperature of the white point

In the same field of endeavor Tsukada discloses first and second device include color temperature of white point (Tsukada, in col. 12, lines 57-65, state "color temperature of original reference white for image display device" and in col. 13, lines 3-5, "color temperature of the target reference" which corresponds to first and second device color temperature of white point),

calculating a parameter related to conversion of chroma based on color

temperature of the white point (Tsukada, in col. 57-66, state "color temperature of original reference white for image display device is given" and in col 13, lines 3-10, "color temperature of the target reference is given" which corresponds to first and second device include color temperature of white point and based on the input and output color temperature of white point power spectra is calculated for input and output devices and in col.13, lines 34-40, states "calculating spectral [input output spectra] chromatic adaptation ratio used for realizing color matching in the state of incomplete chromatic adaptation which corresponds to calculating a parameter related to [ratio of chromatic adaptation ratio] conversion of chroma based on color temperature of the white point.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of calculating a parameter related to conversion of chroma based on color temperature of the white point as shown by Tsukada in the system Narahara and Ito because such a process maintained the appearance correspondence between different coloring system having different white references.

### **Allowable Subject Matter**

6. Claim 7 is objected as being dependent on rejected claim but would be allowable if rewritten in independent form including the limitation of the base claim and any intervening claims.

## Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

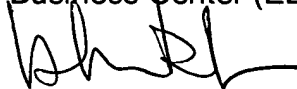
## Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherali Ishrat whose telephone number is 571-272-7398. The examiner can normally be reached on 8:00 AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Au Amelia can be reached on 571-272-7414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ishrat Sherah

Patent Examiner

Group Art Unit 2621

May 28, 2005



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